

METHOD AND SYSTEM FOR DETERMINING DATA RATE  
USING SUB-BAND CAPACITY

ABSTRACT

5           The present invention is directed to methods and systems for providing an  
accurate estimate of the channel capacity that may be performed for each symbol rate  
tested during line probe. In addition, an optimal symbol rate under a set of conditions  
may be determined using the capacities for each tested symbol rate. In the G.SHDSL (or  
other) standard, provisions may be made for rate negotiation to take place between two  
10   communicating modems after a line probe session. The present invention provides an  
approach to rate negotiation that implements an approximation of channel capacity using  
a geometric mean calculation. The capacity for a plurality of M frequency sub-bands  
may be computed to find an estimate of channel capacity for a rate of interest. The sub-  
bands may be any segment of a total N frequency bands found with a discrete Fourier  
15   transform (DFT) or other method of spectrum estimation.